423 passers-by may slake their thirst. This also reflects the fact that
823 the retention of surplus water is considered an act of bad faith by a person's neighbors; and the latter fact in part makes it necessary for irrigation water upstream to be properly carried out and led off, and thus that holdings under irrigation be leveled and conveniently prepared.

B) Usage of Water in General:

312 Utilization of water in the Rif presents three facets which are common to all societies: utilization by animate beings, by (or
312 for) lands, and by (or for) industries. Rights of preference are also
423 the same, and in the same order: first, animate objects, the surplus
[402] for lands, and what remains, for industry, which in the Rif is represented by turbine water mills (dhasirth w aman, pl. dhisira w aman), which in times of excessive dryness or drought do not have the right to utilize water from those irrigation channels which divert or subtract the flow from the principal ditch.

C) Water Points for Men and Animals:

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562 Water points in Rifian villages whose liquid content is destined for human and animal consumption are not regulated by any by-laws other than that of designation of the hours in which men may go to them; the rest are reserved for women, for whom it is also customary to reserve, beforehand, and whenever possible, fixed points for washing and bathing. For this reason, if the village contains diverse water
[164] points, one is used by the women and another by the men; and the surplus water is channeled toward a pond (agirmam, pl. igirmamen), which forms the common watering place for the animals as well as a malarial focus from which it is difficult to extinguish the mosquitoes.[118] The

15. THE QANUN OF THE LOWER GHIS RIVER (AITH WARYAGHAR):

312 [133] From this river, the longest of those which bathe the Central Rif (more than 70 km.), as with its companion and eastern neighbor the Nkur, only the surface waters are used, and very imperfectly, by the Rifians in the small meanders which its narrow basin forms. For the [648] Rifians there is too much water and not enough land. Up to the present, the Spanish protectors have not attempted the slightest modification nor the study of the Ghis basin and its regimen with utilitarian ends in mind. It is a wealth which, like so many others, is lost. There is too much water and nevertheless the Rif is thirsty. [132] The Rifian spends the whole year looking at the sky, an attitude which has become contagious to the protectors, imploring a few drops to fall in order to save his miserable <u>winter</u> (author's italics) harvest[125].....

In all the long basin of the Ghis one does not perceive the handi- work of man. Neither bridges nor acqueducts, neither dams nor any [487] installations to raise up its waters. Paths wind along its pebbly and steep banks to hide themselves in the dried-up stony bed. Small [402] and winding irrigation furrows timorously make haste to return suddenly the flow which they secretly absorbed, under the shelter of thickets, after (providing water to) move some small and rudimentary turbine mill. Only at the height of Targist, military techniques with their trans- portation of water give such a pessimistic sight a chance to change. 312 133 It is necessary to descend kilometers and kilometers down the steep bed of the river, to about some three kilometers from where it empties

312 into the sea, in order to really listen and take notice at last of
133 the song of the Ghis, the activity and human ingenuity, the fertilizing mission of the water, the utility of the same, the gentleness of the countryside, the density of the population, the happiness (by comparison) of the orchards and gardens, the wealth and well-being, the convenience for (administrative) functionaries, the advantages of technology and the necessity of associating oneself with humans.[126]

312 In its long course the Ghis provides the water to turn 55 Rifian
402 turbine mills (1935).[127]

312 In Bu Harishen, on the left bank of the Lower Ghis, upstream from
[103] the bridge over the river, is where this river begins its well-performed work, bored by its useless rambling, acquires freedom, jumping from its bed to spill itself over in equal parts into the three principal ditches, l-Bzimma, "the tied-up"[128], on its left bank, and Bulma'iz and Thafadhna on its right. The regimen of these ditches is indicated below and their mean longitude is some six kilometers.

[103] Sidd Dharga nl-Bzimma (l-Bzimma): "the tied-up", which takes its name from that of the ancient ruined city, al-Mazimma[129], on its left bank. Its flow is one-third of the permanent intake of the dam at
[212] Bu Harishen. There is a written document which regulates distribution of its water and proves its rights to property.[130] It empties (into the Mediterranean) at the height of the ruined castle of the Mujahidin[131] on the beach, in front of the old Peñón de Alhucemas (Isle of al-
[402] Husaima). It moves a mill belonging to the Qa'id Sriman r-Khattabi and to Muhand Ushshan.[132]

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It has a turn cycle of six days, which are distributed among the four lineages (dharfiqin), these in turn dividing their turns among their respective branches (ijujga), in the following order:

1st Day (24 hours): Ajdir (U Hammu; U Haddu)

2nd Day (24 hours): Ughir Iyizan (U Xikhrif; U Yihya u Musa)

3rd Day (24 hours): Ajdir (U Mis'aud u Yusif; W 'Alla w Ujdir)

4th Day (24 hours): Ughir Iyizan (U Dris; W 'Alla Ughir Iyizan)

5th Day (24 hours): Bu Mqathir

6th Day (24 hours): Zawith (Fisra and Andrusen--Ushannen--Ihaddallahan--Dharwa nd-Hajj 'Abdinnbi)[133]

On the seventh day, the sequence is repeated.

Sidd Dharga n-Bulma'iz: on the right bank. It begins, as does l-Bzimma, at Bu Harishen, crossing the river in order to divide its water with Dharga n Tfadhna, and each one of these three ditches receives one-third of the permanent flow taken in at Bu Harishen. It runs for a few kilometers and reaches the sea at Swani Waddai (Lower Swani). It moves three mills, the first belonging to the Qa'id Sriman (r-Khattabi) and 'Abdinnbi, the second to I'arhuthen and the third to Dharwa nd-Hajj Si 'Ari Ubarru.[134]

[402]

It has a turn cycle of three days for the three dharfiqin indicated, and they in turn distribute the water among their ijujga, which make them up in their own way. The turn begins at the maghrib, or sunset prayer.

[805]

1st Day (24 hours): Imhauren: Aith 'Aru Hmid
Aith 'Abdallah u Hmid
Aith Muhand u Hmid
Aith Bu Dhimmus (only when water is scarce)[135]

312 20th Day: Aith Mhand u Yihya (Dhifirasin)
571 21st Day: Aith r-'Arbi (r-Hujjaj)
613 22nd Day: Aith 'Abdallah u Hmid (Imhauren)--recuperates its turn
23rd Day: Im'aruwen (Dhifirasin)
24th Day: Dharwa nd-Hajj Si 'Ari Ubarru
25th Day: Aith Bu Dhimmus (Imhauren)--takes turn of Aith Muhand u Hmid
26th Day: Aith Mhand u Yihya (Dhifirasin)
27th Day: I'arhuthen (read I'abbuthen) (r-Hujjaj)
28th Day: Aith 'Aru Hmid (Imhauren)
29th Day: Aith Mhand u Yihya (Dhifirasin)
30th Day: Aith r-'Arbi (r-Hujjaj)

And so on.[140] To attempt to vary this unending chain which the [182] irrigation turns of the Rifians make up in those ditches with permanent flow is to promote major altercations and to upset the equilibrium of the whole of the Plain of al-Husaima.

312 The simple attempt by a Rifian miller to divert for a few
571 seconds the water of Bufma'iz so that it would flow to his turbine mill,
402 I recall, provided the motive for a sudden and vehement protest by the
578 users of this ditch, en masse, to the authorities; the whole Plain of al-Husaima took alarm to such an extent that no procedure nor influence (on the part of the authorities) could be brought to bear toward the peaceful possibility that the people might acknowledge the man's alleged right; and, nevertheless, this Plain needs more than a concerted arrangement and ordination, an improvement and rectification of the principal ditches;[141] and above all it needs a possible increase of flow for the outlet of subterranean or subalveal waters.

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Sidd Dharga n Tfadhna: on the right bank. It takes half the water from Bufma'iz, and therefore begins, as do the other two, in Bu Harishen, the permanent flow taking up one-third of the dam. It moves four mills: that of Muhammad Akuh and Si Muhammad Budra; downstream, that of Dharwa nd-Hajj Shiddi; the next, that of Dharwa n Hammu Taqar'aith, Qa'id Sriman (r-Khattabi) and Muhand nd-Hajj Hammu; and finally, that of Dharwa nd-Hajj Hammush.[142]

The turn is one of three days for the three dharfiqin using the ditch, and each lineage redistributes its twenty-four-hour flow as follows:[143]

1st Day: Yinn Si 'Amar Umrabit

2nd Day: Aith Bu Dhimmus (24 hours): Ajdir (12 hours)

Andrusen (2 hours 40 minutes or one-fifth)

Aith Bu Dhimmus (9 hours 20 minutes or four-fifths)[144]

(Andrusen and Aith Bu Dhimmus thus irrigate 12 hours between them)

3rd Day: Aith 'Aru Hmid (Imhauren) (24 hours): Aith 'Abdallah u Hmid

Aith Muhand u Hmid

Aith 'Aru Hmid

The Ghis also provides water for three other ditches before it empties into the sea: Tuth ("mulberry") and Hamman[145] on its left bank and Shimurra on its right; but they do not have a permanent flow like the others discussed above, nor for that matter is their regimen or capacity, which is somewhat arbitrary and subordinate to the others, well regulated, for an irrigator, during his turn, can, if he wants,

312 lead the water to which he has a right in any of the main ditches into
571 these three smaller ones. The ditch of Tuth, when it has water, moves
613 the mill of Dharwa nd-Hajj Mis'aud. The irrigators of the Tafadhna
[402] ditch, whether the turn is interrupted or not, have the right to use
that of Shimurra, but giving first choice to those who use it regularly.

16. QANUN OF THE NKUR RIVER (AITH WARYAGHAR):

312 The Nkur River has an irrigation regimen which is less exact than
675 that of the Ghis, and the written agreements on the distribution of its
waters are few and recent. One of them refers to the division of waters
between the Axt Tuzin and the Aith Bu 'Ayyash, with the intervention of
the Bureau of the Aith Waryaghar (in Ajdir).[146] In any case, the
establishment of such agreements is based upon the same notions and
the same norms as in those pertaining to the Ghis.

312 In the Middle and Upper Nkur, there is more than enough water to
[621] irrigate the meanders which the river has created, through which it is
easy to affix by-laws to the 'azibs[147] of the neighboring jma'ths which
own land on its banks, given the small amount of land under irrigation.
[241] There is even freedom and waste, and it is not uncommon to see, during
harvest time, the formation of tiny threshing floors with capricious
irrigation-furrows of 300 and 500 meters in the middle of the river bed.

[619] There are meanders like Dhaghzwith n Dasa (upstream, in the territory of Axt Tuzin, and near the bridge on the right bank) and Dhazur-akhth (downstream, in the territory of the Aith Bu 'Ayyash, and also right beside the same bridge, but on the left bank), which are of relatively large dimension and which have already stabilized turns; but the real difficulties and concomitant near-perfect solutions are

A, [See pp. 361-369--Analyst]

312 [619] only found in the Lower Nkur, the principal water outlets of which, by acting as dividing lines between different tribes on both banks,[148] are Aghbar u Yidir, on the right bank and upstream from the Thanda Hawa pond, and Azru n Srith ("Rock of the Bride"), north of the former.

The latter point is the most important, where the wide Plain of al-Husaima and the ditches which traverse it may truly be said to begin. In the accompanying diagram, all these points are indicated, as well as the principal ditches, the regimen of which we shall now indicate in outline, with the hope that these notes may someday serve as the basis of a more detailed study.

West Bank:

Dharga n Dahar: begins downstream and right beside the piste to the Thimsaman, bordering it and crossing the main Tetuan-Melilla road to [402] end up in Imzuren. It moves three mills. It has two turns of twenty-312 four hours each: one for the Qa'idate of Nkur (Aith Bu 'Ayyash) and 571 the other for that of l-Uta, the Plain. The latter, in turn, is divided into one-third for Imzuren and two-thirds for Aith Musa w 'Amar;[149] and this gives rise to the following cycle:[150]

1st Day: Aith Bu 'Ayyash
2nd Day: Aith Musa w 'Amar
3rd Day: Aith Bu 'Ayyash
4th Day: Aith Musa w 'Amar
5th Day: Aith Bu 'Ayyash
6th Day: Imzuren

312 Dharga Ughzar Amzzyan ("ditch of the small river"): In May 1938 [402] the flow of this ditch was 513 liters per second. It originates

312 (402) downstream from Dharga n Dahar, and it yields one-third of its flow to Dharga n Tmsaman; it arrives at the Bulma'iz ditch at the height of Thafrasth, near the now defunct Wednesday Market of Sidi Bu 'Afif; and it moves four mills: the first belonging to Muhand 'Aida w 'Amir; the second, to 'Allush nd-Hajj Muhand u Haddu; the third, to 'Abdssram nj-Hajj Bu Qiyadhen; and the fourth, to the Qa'id Sriman (r-Khattabi) and to 'Amar 'Abdallah nd-Hajj Muhand.[151]

312 571 It has three turns: one for those upstream (designated as n-dara), another for those downstream (s-waddai), and the third for the Granja Agricola or Model Farm of Imzuren (this last on Wednesdays and Thursdays), in the following manner:

1) N-dara (24 hours, distributed into 5 ditches): 1st--Sidd r-Hajib
2nd-Sidd Inufan
3rd--Sidd Bu Kra'
4th--Sidd Ahammar
5th--Sidd Miskur[152]

2) S-waddai (24 hours, distributed into 3 ditches): 1st--Tigarth (12 hours)
2nd--Sidd I'abbuthen (6 hours)
3rd--Sidd Aith Mis'aud (6 hours)[153]

3) N-dara (24 hours, distributed into 4 ditches): 1st--Sidd Tagharbund
2nd--Sidd 'Abdallah
3rd--Sidd 'Abdallah
4th--Sidd Ishtari[154]

4) S-waddai (24 hours, distributed into 2 ditches): 1st--Imhauren (12 hours)
2nd--Aith Mhand u Yihya (12 hours)[155]

312 Dharga n Tmsaman: This ditch in May 1938 had a flow of 256 liters per second. It is located on the same bank of the river, and down-
[402] stream from the Aghzar Amzzyan ditch. It moves two mills (one belonging to the Muhammad nd-Hajj Ussar, and the other to Muhammad n Tahir), and it has three turns, one for the tribe of the Thimsaman[156] and two for that of the Aith Waryaghar (lineage of Aith Musa w 'Amar, subclan of the Aith r-'Abbas, clan of the Aith 'Ari), as follows:[157]

1st Day: Ifthisen (Aith Musa w 'Amar)

2nd Day: Thimsaman

3rd Day: Ihankuren (Aith Musa w 'Amar)

The three other ditches on this bank, Sidd Jdid, Sidd 'Ain Harri and Sidd Swani, only have water in times of abundance:

Sidd Jdid: At the end of May 1938 this ditch had a flow of 40 liters per second. It originates one kilometer below Dharga n Tmsaman, in the crossroad from Bu Srama[158] and the (Spanish-built) airport to the Thimsaman.[159]

Sidd 'Ain Harri: Born near the road leading from the Granja of Imzuren to Truguth (Thimsaman).

Sidd Swani: The last ditch on the west bank of the Nkur, some two kilometers from the mouth of the river.

East Bank:

312 Dharga n Tufdhisth (???--"ditch of the hammer"??): At the point
619 called Aghbar u Yidir, in front of the mkhazniya post of Imnudh, up-
675 stream from the Thanda Hawa pond, a division of waters is originated
217 between the tribes of the Axt Tuzin and the Aith Waryaghar in equal
[103] parts, according to a document in the archives of the Bureau at Ajdir,[160] which pertains to the agreement to which both these tribes came.

312 Dharga (Sidd)n Bujinn: Downstream from Dharga 'Arridh, in front
[402] of Dharga n Dahar. It reaches Habbuqush[167] and moves three mills
(Sriman Muhammad u Bari, Hammadi n Muh u Bari and Hmid Hammadi).[168]
[591] It has two turns, for the Thimsaman and the Aith Bu 'Ayyash.[169]

Dharga Iznagen: Downstream from Bujinn, it reaches Habbuqush and
[591] has the following turn cycle: Imrabdhen n Bu Zwiqa, I'abbuthen, Ims'-
[402] audhen, Habbuqush and Thabirkhashth.[170] It moves three mills (Hmid
n 'Amar, Si Mhand u bil-Qasim, and Muhammad n bil-Hajj).

104 Dharga nj-Fars: only in time of abundance.

Vocabulary: water-aman; irrigate-sissu; irrigator-itsissau; turn-nubth, pl. nubath; dam-uggug, pl. uggugen; sluice or dyke-sidd; ditch-dharga, pl. dhargiwin or dhargwin; irrigation furrow ("donde se rompe agua")-anqssar, pl. inqssaren; water or irrigation expert-aquwwam, pl. iquwwamen;[171] land-dhamurth; garden, orchard-dhabhirth.

17. DOCUMENT REGARDING THE DIVISION OF IRRIGATION WATER: TRANSLATION:

695 Praise be to God. After the truce (sulh) took place between the
614 three subclans, which are comprised by the people of Ajdir and those
312 who are with them, those of the Imhawren and the ones with them, and
578 those of the Imrabdhen and the ones with them,[172] the water of the
423 River Ghis which is born (literally, "comes out") in the springs of
691 Bu Harishen and in those below it was partitioned into three irrigation ditches, in conformity with what is set down in the document which records the testimony of those who have agreed to it, the Shaikh Muhammad bin 'Ali bin Shu'aib Amhawil, wishing to appropriate for himself the water which exists above the springs, whose water is